

Date: Sun, 22 Aug 93 04:30:15 PDT
From: Ham-Digital Mailing List and Newsgroup <ham-digital@ucsd.edu>
Errors-To: Ham-Digital-Errors@UCSD.Edu
Reply-To: Ham-Digital@UCSD.Edu
Precedence: Bulk
Subject: Ham-Digital Digest V93 #16
To: Ham-Digital

Ham-Digital Digest Sun, 22 Aug 93 Volume 93 : Issue 16

Today's Topics:

 assistance: modem <-> x-mitter/receiver link (4 msgs)
 Autopatch (phone patch)
 radio modems for internet access

Send Replies or notes for publication to: <Ham-Digital@UCSD.Edu>
Send subscription requests to: <Ham-Digital-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Digital Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-digital".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 21 Aug 93 14:16:34 GMT
From: ogicse!emory!kd4nc!ke4zv!gary@network.ucsd.edu
Subject: assistance: modem <-> x-mitter/receiver link
To: ham-digital@ucsd.edu

In article <CC3CCu.2I6@NeoSoft.com> sengle@blkbox.COM (Steven W. Engle) writes:

>I need to link two computers together via a wireless link.
>After giving it some thought, I came up with a scheme using
>modems (I already have) and line level (as in home stereo)
>audio receiver / transmitter pairs (available at Walmart).
>See ASCII chart below for a rough layout. The only thing
>I'm not sure about is the box labeled "device". I guess that
>the "device" would have to provide the standard telco tip/ring
>electrical interface to the modem, as well as the circuitry to
>convert the telco signal to individual send/receive line level
>signals. With two of these set-ups connected via the radio
>link, the modems would be connected back-to-back, thus
>linking the PCs together.
>

>And now the \$64K question - does anyone know how to build the

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>"device"? Or where to buy one (preassembled or kit)? Or is
>there a better way of doing this? Cheap RF modems?
>
>FYI: One PC is my Mac, the other is (well, will be) the 6.270
>robotic board set from MIT. A physically small/low-powered
>"device" is highly desired.

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>|
>| ant. (x-mit to correponding receiver at other end of
>|                                     wireless link)
>| +-----+
>+-+ x-mitter |
> +-----+
>         |
>         | line audio
>         +-----<-----+
>         |
>| ant. (and vs. versa) |
>|
>|               +---+-----+ telco   +-----+ serial
>| +-----+      | device |<----->| modem |<----->
>+-+ receiver |      +-----+      +-----+ to/from
> +-----+      |                                     PC
>         |
>         | line audio |
>         +----->-----+

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The "device" you want is called a 2 line to 4 line converter and is a standard telco item available from places like Immac, Black Box, etc. Or you can cannibalize a real phone. It's the hybrid that takes the two wire feed and splits it to the microphone and earpiece.

Since this is a "nailed up" connection, you can forget telco tip and ring voltages and ring generators. Just force the modems on line by giving one the ATA command, and the other the ATO command. Voltage on the line isn't used by the modems, unless they're oddball line powered units, and you can manually get around ringing voltage with the forced commands.

Gary

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Gary Coffman KE4ZV          | "If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good  | uunet!rsiatl!ke4zv!gary
534 Shannon Way           | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244    | -Ray Stevens          |

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Date: Sat, 21 Aug 1993 03:58:05 GMT
From: nntp.ucsb.edu!mustang.mst6.lanl.gov!nntp-server.caltech.edu!
elroy.jpl.nasa.gov!swrinde!menudo.uh.edu!uuneo!sugar!blkbox.COM!
sengle@network.ucsd.edu
Subject: assistance: modem <-> x-mitter/receiver link
To: ham-digital@ucsd.edu

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FYI: One PC is my Mac, the other is (well, will be) the 6.270
robotic board set from MIT. A physically small/low-powered
"device" is highly desired.

I'm cross-posting to comp.dcom.modems, comp.robotics, and
rec.radio.amateur.digital.misc. Please e-mail or post -
If I get a lot of e-mail, I will summarize to the net.

Thanx!

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|
| ant. (x-mit to correponding receiver at other end of
|                                     wireless link)
| +-----+
+-+ x-mitter |
  +-----+--+
          |
          | line audio
          +-----<-----+
| ant. (and vs. versa) |
|
```

```

|
| +-----+
+-+ receiver |
| +-----+
| line audio |
+----->-----+

+---+---+ telco +-----+ serial
| device |<----->| modem |<----->
+---+---+ +-----+ to/from
PC

```

Steve Engle
sengle@blkbox.com

Date: Sat, 21 Aug 93 09:31:09 CDT
From: agate!iat.holonet.net!vulcan!gary@ames.arpa
Subject: assistance: modem <-> x-mitter/receiver link
To: ham-digital@ucsd.edu

sengle@blkbox.COM (Steven W. Engle) writes:

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> I need to link two computers together via a wireless link.
> After giving it some thought, I came up with a scheme using
> | ant. (x-mit to corresponding receiver at other end of
> |
> |                                     wireless link)
> | +-----+
> +-+ x-mitter |
> +-----+---+
> |
> | line audio
> +-----<-----+
> |
> | ant. (and vs. versa) |
> |
> |
> | +-----+ telco +-----+ serial
> | +-----+ | device |<----->| modem |<----->
> +-+ receiver | +---+---+ +-----+ to/from
> +-----+---+ PC
> |
> | line audio |
> +----->-----+
>
> Steve Engle
> sengle@blkbox.com
>

```

unless you have 4-wire modems (often used on leased line circuits)
the device will have to perform a hybrid function. that is, it will
need to combine the output of the rf receiver with the input to the

rf transmitter, without returning a significant amount of energy froe the receiver back into the transmitter. This can be done, in a couple of different ways, but it involves either a couple of transformers and an impedance matching circuit, or active echo cancelling (sp ?).

Anyway, if you have 2-wire modems, they may also require a little loop current. some modems that normally require loop current can be optioned to operate 'dry', i.e., no loop current. If you need loop current, try at least 20 mA of VERY WELL FILTERED dc.

Good luck

Gary Tennyson
gary@vulcan.com

Date: Sat, 21 Aug 1993 15:28:01 GMT
From: psinntp!uuneo!sugar!blkbox.COM!sengle@uunet.uu.net
Subject: assistance: modem <-> x-mitter/receiver link
To: ham-digital@ucsd.edu

patrick@nic.cerf.net (Patrick O'Grady) writes:

>In article <CC3CCu.2I6@NeoSoft.com> sengle@blkbox.COM (Steven W. Engle) writes:
>>I need to link two computers together via a wireless link.
>>... (all sorts of stuff omitted) ...
>>
>It might be worth rethinking your design. A frequently used technique
>for close wireless communciation is via infra-red transmitters and receivers;
>exactly the way your remote control talks to your VCR. A simple circuit
> (bunch of stuff deleted)...

>-patrick@cerf.net

I built an IR link (almost exactly as you described) for anther project last year. IR won't work here though as the link need to work through walls, around corners, etc.. One of the computers (the 6.270) is on (will be on) a mobile robotic platform wandering around the house...

Thanx!

Steve Engle
sengle@blkbox.com

Date: Sun, 22 Aug 1993 06:10:17 GMT

From: usc!howland.reston.ans.net!gatech!kd4nc!ke4zv!gary@network.ucsd.edu
Subject: Autopatch (phone patch)
To: ham-digital@ucsd.edu

Note: I've directed followups to rec.radio.amateur.misc.

In article <9308201759.AA14207@stlaurent.gel.ulaval.ca> taalebi@gel.ulaval.CA (Ali Taalebi) writes:

>
>I would like to buy an autopatch (phone patch) in order to set up
>a mobile phone using two handhelds (Icom 24AT).
>
>Conveying your recommendations and sharing your experience in this
>regard will be very much appreciated.
>
>Does anyone know of the regulations for using autopatch?

There are basically 3 types of "autopatch" in amateur use. The first kind, and the one that immediately comes to mind, is the repeater autopatch. This is where a phone line is interfaced to a normal amateur repeater through it's normal repeater controller. In operation it is activated by touchtone commands and operates in half duplex. IE only one party can talk at a time with the control station being the call originator. Thanks to the generally good coverage of repeaters, handheld operators can generally expect ranges of up to 60 miles. This is normally a shared resource available to any amateur who may use the repeater. The phone patch capability is an ancillary function of the normal repeater controller. Many repeater controllers are suitable. One such is the S-Com 7k at about \$300. Of course you also need the repeater, usually about \$1200-3500 depending on it's configuration.

The second kind, called the simpatch, uses two ordinary simplex radios and a special sampling controller. When the radio attached to the phone is activated by commands from the other radio, it dials the phone and transmits the phone audio nearly continuously. It listens for a short period once per second. If it hears a carrier from the other station during this sampling interval, it turns the circuit around and goes into receive mode, listening to the other station's audio and transferring it to the phone line. When the controlling station's carrier drops, it reverses again and goes back to transmitting the phone audio. There are a couple of simpatch controllers on the market. They cost around \$500. And of course you need a radio with

a fast TR turnaround for the sampling. This is classed as auxillary operation and must not be done on 2 meters.

The third type is called a crossband patch. In this case, two dual band radios are used to establish a duplex telephone interconnect. Both radios transmit and receive at the same time in a manner similar to that of ordinary cordless telephones. A simple patch controller can allow one station to initiate operation with a TT command. This requires radios capable of simultaneous dual band operation. I don't know of any commercially available controllers specifically designed for this service, but an ordinary repeater controller, such as the S-Com 7k, can be pressed into this use. Note this is auxillary operation again and both bands in use must be above 2 meters.

This latter sounds like what you're trying to do. As to legal questions, there are several sections of Part 97 that can apply. Of course you need a Technician Class license, or higher, in order to establish such systems. You must have a positive control system. The controlled system must ID following the ID rules. There must be a safety timeout timer. And the patch must conform to normal telephone interconnect rules. The S-Com controller can meet all these requirements, except the license bit, you have to do that.

Secondarily, there are content restrictions in the use of the patch. These will be loosened somewhat on Sept 12 when new rules go into effect, but in general you can't transmit obscenity, routine business, or the like types of conversations.

With the crossband patch and simpatch there is a further restriction. Since you are in auxillary operation, the stations must not transmit on 2 meters where auxillary operations are not permitted. In the case of crossband, this leaves out your IC24s. You need radios that operate on two bands above 2 meters. You can use the Icoms with the simpatch, but must do so only on 440 MHz. If you were using a repeater, 2 meter operation would be permitted since the patch is only an ancillary function of the repeater operating under automatic control, and repeaters are legal on 2 meters.

There is a final legal area that must be considered. That's

the case of the so called "reverse" autopatch. That's the case where the ringing phone commands a radio into transmission. That in effect is a third, possibly unlicensed, party initiating transmission. That's a grey area. In the case of a repeater autopatch, it can be argued that this is a telemetry function and thus legal as an ancillary function of the repeater operating under automatic control. But with the simpatch and crossband patch, that's not as clear since only repeaters are authorized to operate under automatic control.

In general, unless you are just wishing to experiment, I think you'll be better served by buying a cellular telephone. They free you of all the amateur restrictions and generally have much better coverage.

Gary

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Gary Coffman KE4ZV	"If 10% is good enough	gatech!wa4mei!ke4zv!gary
Destructive Testing Systems	for Jesus, it's good	uunet!rsiatl!ke4zv!gary
534 Shannon Way	enough for Uncle Sam."	emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244	-Ray Stevens	

Date: 21 Aug 93 15:35:22 GMT
From: ogicse!emory!sol.ctr.columbia.edu!phlim.ph.kcl.ac.uk!sjg@network.ucsd.edu
Subject: radio modems for internet access
To: ham-digital@ucsd.edu

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Hi there,

I posted messages along these lines to uk.radio.amateur, then I found out about this group :-)

I've been told it's possible to do this (below) - so I thought I'd ask experts on it. I'm not yet a radio amateur, but I'm planning on getting a class B license later this year (December). I've also been offered a job in April, when I finish my PhD, so I thought I'd treat myself (:-) to haveing internet access at home.

What I want to know is, is it possible to have the setup below:

+-----+	+-----+	+-----+	+-----+
unix <---->	modem <====>	modem <---->	atari
+-----+	+-----+	+-----+	+-----+

The unix<->modem interface oughtn't be a problem. Neither should the ST<->modem interface (I'll use Ka9q). For all practical purposes it will be the same as having a PC on the end running Linux. (My STe runs the multi-user variety of system software). What's bothering me is the modem<=>modem link.

I'm hoping to use the Heatherington 56Kbaud RF modem on the 1296MHz or 430MHz frequencies. The output of the modem is a 29MHz at 1mW. How easy is it to get a 'transverter' (?) to boost the frequency to my desired one ?

Assuming that is easy enough, what distances can I expect from the modems under realistic circumstances - I live just inside London, about 8 miles from college, where the unix end modem would be. The UK regulations stipulate a maximum power level of 26dBW for 1029MHz and 16dBW for 430MHz (both relative to 1W). I can probably arrange for the unix end to be on the highest portion of the building that has ethernet (7th storey), which might help somewhat.

All I want this for is for me at home to contact 'me' (my machine) in college. I'm not setting up a gateway or anything like that. I don't expect to send porn down the line, or obscene language etc.

What may be a problem is the password for getting into the college system. I could always dial up by BT modem though, then rsh back home. That at least would stop me from sending passwords over the air (because I've been told you can't encrypt things). There may be better options - if so I'm open to suggestions...

Another possible problem is that of friends in the same house. We have a small network (2 linux PC's running X, and my STe) in our house, which would then have a connection to the internet via my STe - would it be possible for them to get mail and serve programs as well as me ?

I suppose this isn't a unique thing - if anyone else has done this and come across pitfalls that I ought to know about - I'd be very pleased to hear from you. Likewise, if it's all plain sailing, then I'd like to hear that too :-)) Very much so in fact :-)) Especially if you're using the same modem/software etc.

Basically, I'm asking all this, because I don't want to spend about 350 pounds (\$550 or so) on kit that won't be any use to me.

All the best,
Simon

End of Ham-Digital Digest V93 #16
